

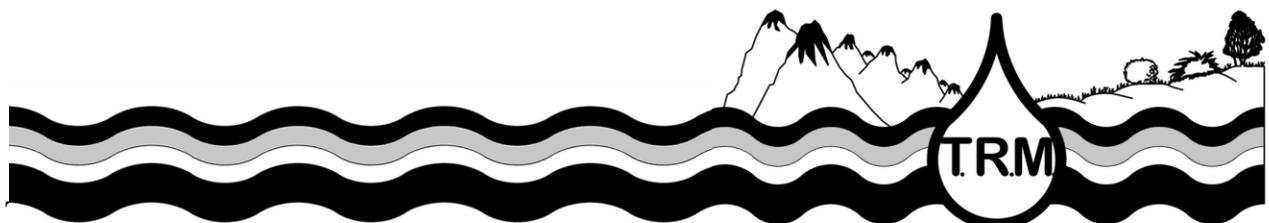


# The River Mile

## Observation and Investigations Site Visits

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# Habitat Observation



- Subject:** Observations, record keeping, expository writing, descriptive writing
- Duration:** Classroom—60 minutes, 40 minutes, 20 minutes; Outdoors—1-2 hours, 30 minutes. Total time: 3 hours 10 minutes
- Location:** river mile site
- When:** Site Visit (first 2)
- Grade:** 3<sup>rd</sup>-12<sup>th</sup>

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## Objectives:

First Site Visit--students will be able to: a) make observations of their river mile site; b) record information in their journal.

Second Site Visit—students will be able to: 1) identify 3 plants, 3 animals or animal signs, and 3 signs of human usage in the field area; b) write detailed description of each; c) code plant and animal observations for NatureMapping data entry; and d) enter plant, animal and water data into the NatureMapping on-line database.

## Materials:

Clipboards, pencils, cameras, rulers, measuring tapes, crayons, markers, field guides, binoculars, loupe lenses, magnifying lenses, habitat Observation Sheet, water testing equipment.

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## Procedures

Habitat Observation site visits can be conducted many ways and differently for each group. Below is the way the NPS Lake Roosevelt park rangers conduct their first two site visits with schools.

Upon arrival at your site have students make predictions about what plant and animals they may see during their visit (this can also be done in the classroom prior to the site visit). Record these on a large sheet of paper. Introduce them to the schedule and activities for the site visit. Conduct a sit spot at/near your gathering spot. Remind students of how to do a sit spot and then have students spread out in the gathering area. Students should be at least 10-15 feet apart, more if able. If the group does not have a lot of experience with sit spots, have the first one last only

about 10-15 minutes, less for younger groups. Bring them together and ask them to share some of their observations. Listen for recordings that have detail and indicate the students understand that this type of observation is more than just looking at grass and trees. Conduct an additional sit spots if necessary. See "Sit Spots and Observations" in the pre-visit section and NatureMapping website for additional information about sit spots.

Prior to your site visit select a small number of students to assist with collecting and testing the water samples for that site visit. You could also divide your group in half and rotate through water sampling and free exploration. This only works if you have less than 40 students. Smaller groups (less than 10) are best for water sampling. If you have 40 or less students have all of them do free exploration for about 1 hour.

When the free exploration/water sampling time is up, gather the groups together and have them work in their small groups to decide what they want to share with the larger group. I usually ask for all the animal observations first and then the plant observations. If you made predictions, check to see how many of the predicted species they actually observed. Discuss why or why not.

For your first site visit you can end here unless you have additional time. If you have more time, or this is the second site visit have students code all observations. Hand out the NatureMapping species code books and explain how to code and record observations on the paper NatureMapping spreadsheet. For all your early site visits have students complete the paper forms in the field and then transfer the raw data to the Excell spreadsheet for NatureMapping when you return to the classroom. Then have an adult or older student enter the data into the NatureMapping on-line database. Once students understand how to do this you could skip the Excell spreadsheet and have students enter data directly into the database.

# River and Shoreline Observation



**Subject:** Observations, record keeping, expository writing, descriptive writing

**Duration:** Outdoors—1.5-2 hours

**Location:** River site

**When:** On-site

**Grade:** 3<sup>rd</sup>-12<sup>th</sup>

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## Objectives:

Students will be able to: a) recognize things that are similar and b) things that are different, c) do comparisons between different habitats

**Materials:** Clipboards, Binoculars, Cameras, pencils, habitat observation form

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## Procedure:

List similarities and differences between the shoreline, two sides of the river including the flora, fauna, landforms, etc.. Hypothesize possible causes for differences and provide reasons for the hypothesis.

**Activity:** Write, draw, photograph or otherwise record observed connections, similarities and the differences between the two banks of the river. With a group of two or three, 1) brainstorm possible reasons for the differences and explain why that might be a good reason. 2) brainstorm how the connections and how they may interact with each other and cause and effect. Share your reason with the full group when we join in a large group.

**Assessment:** Venn Diagram with the similarities and differences and at least five reasons (# based on age) why the differences might exist with a rationale for each reason. Mind map the connections.

# Inquiry Field Investigation



**Subject:** Observations, record keeping, expository writing, descriptive writing

**Education Standards:** observations

**Duration:** 2-6 hours

**Location:** School Site

**When:** First site visit

**Grade:** 3<sup>rd</sup>-12<sup>th</sup>

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## Objectives:

Students will be able to: a) formulate 3 different types of questions: descriptive, comparative and correlative, b) categorize questions

**Materials:** clipboards, pencils, scientific equipment as needed by students.

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## Procedure:

1. Do an observation of the school yard and record questions.
2. Conduct an observation site visit where students record all their questions about the site.
3. Classroom Questions

Create a list of questions on the board which illustrate the different types of questions. Discuss with students the different types of questions:

**Information**--what, who. Helps start everyone out at the same level.

**Process**—how could it be, why is it, generates discussion and ways to think

**Imagining**—starts to suggest relevance, what if, imagine it in another context

Create a new list of questions on the board and have your students categorize them.

To assess if they understand the types of questions, give students a list of questions, and have them categorize them.

Now, using the observations (you may need more from students) from the indoor Sit Spot activity have students list what they know about the classroom, record on the board for everyone to see. Now ask them, is there anything you would like to know about what you were observing? Are there things you didn't know about or wondered

about? Have several students share. Create a list of questions on the board in no particular order. Next have the students categorize those questions.

Have each student create a different question as an example for each of the 3 types of questions.

**4. Observation Handout—do this after the classroom activity on questioning.** Combine the partner groups from the sit spot activity (or new groups) into larger small groups. Give each group the observation handout. Explain the form. E.g., observations go in the notes section and on any other paper they have.

Send the groups outside to a sit spot location and observe their site for 30 minutes. Once they have observed their site the small group creates a list of questions they have about what they observed. Then have them select one thing that interests them the most and write possible answers to this question. Repeat with groups in a different location.

Return to classroom and:

Ask students about what types of things they observed? Did all students observe and record the same thing? Create categories of the types of things observed. What kinds of observations were made?

Ask for each group to report their question and record these on the board. Then have students categorize the questions. What kinds of questions are these? The **Information** questions are helping create a baseline of information so that everyone can start at the same place. Those questions that are **Process** questions help answer how could it be, why is it, generates discussion and ways to think. Those **Imagining** questions start to suggest relevance, what if, imagine it in another context. These different types of questions help you determine how you would find the answer to your questions.

Some things we want to learn about are not easy to see (e.g., air pollution levels) and so we have to create tests and research to discover the answers. What are things that we can't see easily? How can we detect them?

Discuss a little bit about how science developed.

Ask each of the groups to discuss and record possible ways of finding the answer to their question. Then each group reports back to the class.

Something similar to this will be done at their River Mile with the park ranger and on future visits

5. Repeat at your site.
6. Have students select one of their questions created during a prior observation site and rewrite it into an investigative question—one that can be measured.

Some students/groups may not have something in which they are very interested. Assist them by asking them questions about their interests and guide them to something that interests them.

NOTE: not all investigations will have readily apparent relationships to water quality. After the investigations you will lead them through a discussion about how it all is correlated.

Now have students decide what they would do to answer their question and design a field investigation to address the question. Assist students with revising their question and enhancing its measurability. For more on questions see the "Field Investigation" book from Pacific Education Institute.

Now show students what is available for their use, or obtain the equipment and supplies needed for their field investigations. Some equipment may be available from Lake Roosevelt NRA.

Assist students with questions they may have during their investigation, ensure their safety at all times and that all NPS rules and test safety procedures and protocols are followed at all times. Otherwise let students conduct their investigation as they desire---no matter how valid or invalid it may be. The point right now is not to get it right the first time, it is for students to discover the field investigation procedure.

Once all investigations are completed have student groups prepare a written and verbal report of their investigation. These should include: investigative questions, procedures, results, what they learned, how well it worked, any conclusions and what they would do differently. Give each group 5-10 minutes to report and 5-10 minutes for group discussion.

Once all reports are completed ask students if any of these questions/investigations deal with relationships between components of the ecosystem of Lake Roosevelt and

the Columbia River watershed and how they might affect water quality (or shorter version: water quality). Have students discuss what they think is related and how.